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Managing Scotch Pine for High Quality Christmas Trees

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by

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Christmas tree production is a growing industry in Ohio. Among the species used Scotch pine is the most popular, accounting for over one-half of the trees being planted. The characteristics of good strains of Scotch pine which make it a desirable Christmas tree are: (1) its excellent needle retention, (2) pleasing shape and type of branching, (3) good color, (4) hardiness, and (5) ample growth rate.

Since so many landowners in Ohio and surrounding states have already planted or are planning to plant millions of Scotch pine which they expect to harvest as Christmas trees, it is important that they produce high quality trees which are acceptable to consumers. There is already a surplus of low quality trees which cannot be marketed at a profit.

In order to produce high grade trees certain cultural practices must be followed. These include selection of a suitable planting site, a satisfactory strain or seed source, proper planting techniques, control of competing vegetation, control of insects and diseases, and shearing to improve form and density. Prospective growers who are not prepared to meet the above requirements cannot expect to obtain satisfactory results.

Planting Site

Scotch pine is noted for its ability to grow well on poor soils. Old fields which have recently been abandoned from cultivation or grazing and are well drained are suitable for Scotch pine. If there is a cover of rank vegetation or brush, it is important to mow and clear the site in advance of planting. Under certain conditions, plowing the field and planting a small

Land with a sparse ground cover is an ideal planting site for Scotch pine.

This is an experimental plantation on the Izaak Walton Memorial Forest in Wayne County.

An experimental Scotch pine plantation in the Secrest Arboretum.

grain crop a year before planting trees is desirable in order to prepare the site. Where the cover is low and sparse, no ground preparation is necessary. All hardwood brush should be cut low enough to facilitate mowing and the stumps sprayed with brush killer, (2,4-D plus 2,4,5-T).

Selection and Care of Planting Stock

There are many strains of Scotch pine available to Christmas tree planters. A strain may be characterized by either a crooked or straight stem, long or short needles, fast or slow annual growth and yellow or green needles during the fall and winter months. Seedlings obtained from seeds collected in the northern latitude and higher elevations of the tree's natural range in Europe are prone to become yellow during the winter months, whereas those from southern Europe are more likely to remain green. Some nurseries are cognizant of the above facts and are beginning to produce seedlings of more desirable qualities. The most reliable nurserymen have located a local source of seed from plantation trees which possess desirable genetic characteristics and have given their selection a special name. A variety block of twenty different sources of Scotch pine established in the Secrest Arboretum at the Ohio Agricultural Experiment Station in 1955 illustrates the wide range among different strains in color of foliage after frost, growth rate, form and other features which are important in the production of high quality Christmas trees. Blue-green color, straight stem, short needles, sufficient numbers and upward angle of branches in the whorl, and restricted annual height growth are considered to be desirable traits. Many prospective Scotch pine growers have avoided serious mistakes in the selection of planting stock by inspecting the plantings at Wooster.

The planting stock should be from 6 to 12 inches tall, fresh green in color and have a good fibrous root system. Seedlings of this size are

generally two or three years old. They should be planted as soon as possible after receiving them from the nurseries. If planting is delayed, the seedlings should be placed in cold storage or "heeled-in" in a trench. The trench should be well drained and located in a cool, shaded area. Care must be taken to keep the roots moist at all times.

Planting.

The trees should be planted as early as possible in the spring of the year after the ground has thawed. If fall planted, they must be protected from frost-heaving by some type of mulch.

In producing Christmas trees 5 to 7 feet in height, it is recommended that the trees be planted at a spacing of 6 x 6 feet. This spacing allows 1,210 trees to be planted to the acre and facilitates machine planting, mowing and spraying. Planting machines are available in most areas on a rental basis. Two men with a planting machine can plant one thousand seedlings per hour.

In both machine and hand planting, care should be taken to keep the roots moist and that the tree be planted upright with roots well spread and set in the hole or trench to the same depth at which it grew in the nursery. The soil must be packed firmly around the root system.

Weed and brush control.

It is important to keep the brush and weeds under control in order to reduce competition for soil moisture and light. Scotch pine survival is normally good in sod. However, when the competing vegetation is heavy and not controlled, survival will probably decline and the resulting trees will become somewhat spindly with the lower branches dying out.

Trees growing in plantations where the vegetation is kept under control normally retain good growing lower branches and can be easily handled from

the standpoint of shearing, spraying and harvesting. Thus in the over-all picture the quality of the trees is higher. Certain foliage diseases and insect pests may more readily be controlled when trees are in the open.

Brush can be controlled by either chemical or manual methods. Once brush is removed, annual mowing controls both the brush and weeds.

Weeds are usually controlled by mowing one to three times annually, depending on need, with a rotary type mower. The trees may be cultivated during the first two or three years, but the cultivation should be restricted to level land, otherwise erosion becomes a problem on rolling or hilly land.

Chemical weed control, as yet, has not been used to any degree in Christmas tree plantations, but no doubt research in this area will result in the greater use of chemicals.

Shearing.

Shearing has become an accepted practice in the production of quality Christmas trees. An unsheared tree will normally grow rapidly, but the distance between whorls is so great that the tree is usually undesirable for sale as a Christmas tree. Scotch pine responds very well to shearing and should be sheared usually for the first time in the third year after planting. Not all trees will need to be sheared this first year, but the planting should be carefully inspected. A good guide to deciding when to start shearing is when the terminal (upright shoot at the top of the tree) growth is greater than 12 inches. This is usually the third growing season and after the trees reach a height of three feet.

The terminal should be cut to 12 inches in length and the cut made at an angle. If the top whorl of laterals are cut to one-half the length of the terminal (6") and the remainder of the tree sheared to form (an inverted cone) a quality tree can be produced that meets the federal grading system

These are premium grade Scotch pines which brought a premium price.

Only a small proportion of trees sold are painted.

There is a surplus of low quality Scotch pine Christmas trees.

within six years after planting. Scotch pine may be sheared with good results any time from the first half of June, when terminal elongation is rapidly occurring, to the middle of August.

Those trees sheared in June will produce a longer terminal the following year than those sheared later in July or August. June sheared trees will have to be sheared annually because of this growth response, whereas those trees sheared in July and August may require little or no attention to the terminal the following year.

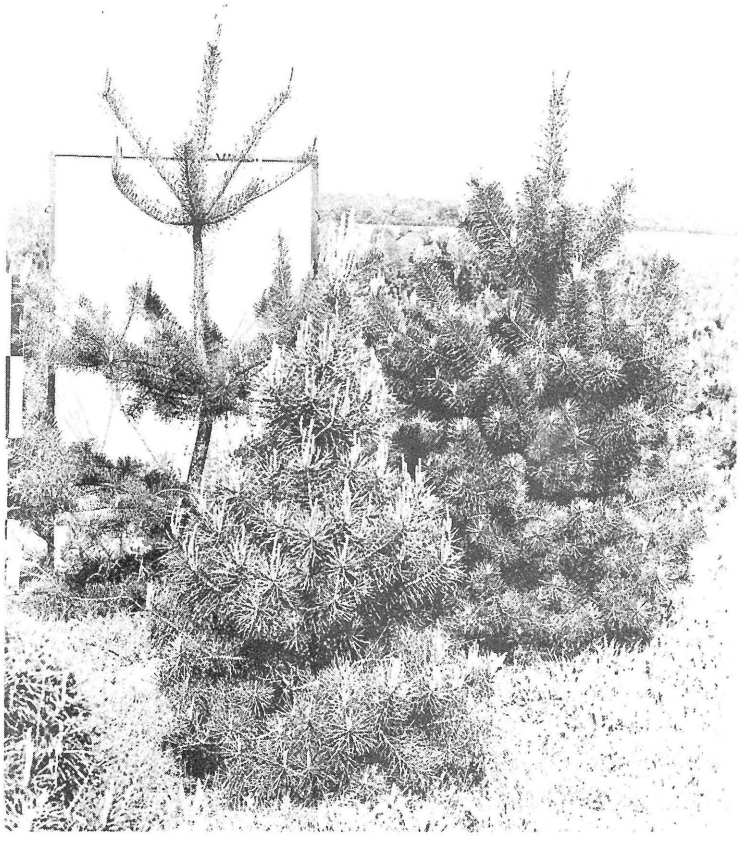
It is suggested that those trees to be sold be sheared only lightly during June in the final year. This will give the tree a natural appearance as well as good bud development on the sheared twigs.

Trees which have not been sheared during the first four or five growing seasons may be recovered by shearing the trees even if done during the winter months. These trees should be sheared drastically and to the desired form. In experiments at the Ohio Agricultural Experiment Station shearing of the current year's growth gave the best result, although cutting of the second year wood also proved successful. Trees sheared to the third year wood died since no needles were present from which lateral buds could develop. A recovery program of this nature required from two to three years. A disadvantage of this type of shearing is that the trees are large and have a thick bole at the base for the size of the tree in height.

Another advantage to shearing is that the number of laterals developed is greater than those of the unsheared trees.

Harvesting and grades.

Ohio growers, being near their markets enjoy a comparative advantage over producers of imported trees in that transportation costs of Scotch pine are relatively high. This is because of the large amount of space required per



Note the difference in density between the sheared trees on the right and the unsheared tree on the left.

Most unsheared trees are undesirable for sale as Christmas trees.

A shearing demonstration on the 1958 summer tour of the Ohio Christmas Tree Growers Council.

individual tree in hauling. Cutting for local markets and for retail marketing generally starts around December 1 and the consumer is, therefore, assured of a relatively fresh cut tree. Most Ohio growers harvest plantation grown trees on a selection basis, cutting individual trees as they become merchantable. A good procedure is to tag all the trees each year which are available for sale.

Recent consumer preference surveys in Ohio and other states have shown that consumers are demanding high quality trees. This has resulted in the development of a federal grading system which provides for U. S. Premium, U. S. No. 1, and U. S. No. 2 grades. To date, not many producers have used the government grades, but some have set up their own grades and have labelled their trees with their name tags. Detailed descriptions of U. S. standards for Christmas trees are available from the Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D.C.

Marketing studies have shown that Scotch pine growers who supplied trees which met federal or similar grades have been able to dispose of their trees at a satisfactory price. As production increases and competition becomes a factor in marketing it is obvious that the growers who can produce the highest quality trees at the lowest cost are the ones who will survive. It is therefore, important that growers apply the management practices which result in quality and efficiency and that they keep abreast of the latest research findings.

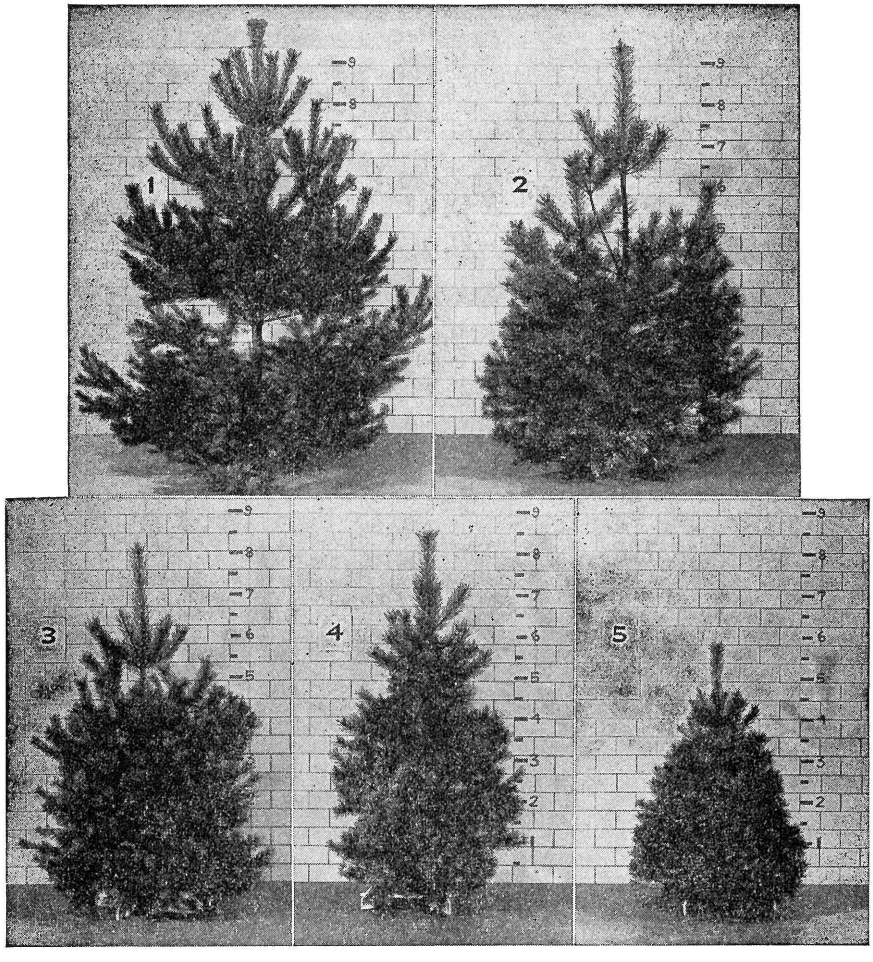
Insects.

Two of the major insects that attack Scotch pine are the European pine shoot moth and the European pine sawfly.(11)

To control the European pine shoot moth a mixture of one gallon of 25% emulsifiable concentrate or 4 pounds of 50% powder DDT should be used per 100 gallons of water. Spraying should be done in mid-April when the buds are swelling and the larvae are leaving their hibernating quarters to enter growing shoots, or between June 25 and July 5 when the eggs are hatching.

The European pine sawfly can be easily controlled by spraying infested trees with DDT at the rate of 2 quarts of 25% emulsifiable concentrate or 2 pounds of 50% wettable powder in 100 gallons of water. The sawfly should be controlled while they are small, and damage to the foliage is reduced.

European pine sawfly larvae on a Scotch pine.



Appearance of Scotch pine (Riga strain) when sheared in June as compared to unsheared trees.

(1) Check, not sheared.
(2) Sheared in June the third year after planting.
(3) Sheared in June the third and fourth years.
(4) Sheared in June the third and fifth years.
(5) Sheared in June the third, fourth and fifth years.

(2), (3), (4), and (5) were sheared lightly in June of the sixth year to shape up trees prior to harvest.

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